DISTRIBUTION OF LARVAL AND POSTLARVAL ANTARCTIC FISHES AROUND ELEPHANT ISLAND AND BRANSFIELD STRAIT — ANTARCTICA.

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ABSTRACT

Distribution and abundance of larval and postlarval Antarctic fishes sampled by plankton nets, from the Oceanographic R/V "BARÃO DE TEFFÉ", around Elephant Island and Bransfield Strait, during the southern summer 1983/84 (PROANTAR II) and 1984/85 (PROANTAR III), were analysed. All the ichthyoplankton was composed of Nototheniidae **(Pleuragramma antarcticum, Notothenia kempi, Notothenia larseni, Notothenia gibberifrons);** Paralepididae **(Notolepis coatsi);** Myctophidae **(Electrona antarctica)** and Channichthidae **(Champsocephalus gunnari).** Of these **P. antarcticum** was the most abundant species followed by **E. antarctica.** The greatest diversity of species (5) was found around Elephant Island.

Key words: Ichthyoplankton, Elephant Island, Bransfield, distribution.

RESUMO

DISTRIBUIÇÃO DE LARVAS E PÓS-LARVAS DE PEIXES ANTÁRTICOS AO REDOR DA ILHA ELEFANTE E ESTREITO DE BRANSFIELD — ANTÁRTICA.

Distribuição e abundância de larvas e pós-larvas de peixes antárticos coletadas com redes de plâncton, a bordo do NAPOc "Barão de Teffé", ao redor da Ilha Elefante e Estreito de Brans-

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field, durante o verão autral 1983/84 (PROANTAR II) e 1984/85 (PROANTAR III), foram analisados. O ictioplâncton era constituido de Nototheniidae **(Pleuragramma antarcticum, Notothenia kempi, Notothenia larseni, Notothenia gibberifrons);** Paralepididae **(Notolepis coatsi);** Myctophidae **(Electrona antarctica)** e Channichthyidae **(Champsocephalus gunnari).** A espécie mais abundante foi **P. antarcticum,** seguida de **E. antarctica.** O maior número de espécies (5) foi encontrado ao redor da Ilha Elefante.

Palavras chave: Ictioplâncton, Ilha Elefante, Bransfield, distribuição.

INTRODUCTION

Early life history stages of Antarctic fish fauna are still poorly understood but after the meeting of the Multinational BIOMASS Research Program in Paris, 1-4 September, 1981 the investigation in this field increased to achieve the main objective suggested by the working group. Recently, many scientists contributed in ichthyoplankton surveys to complement the knowledge on the ecology of adult fishes (Wörner and James, 1981; Hempel and Heywood, 1982; Mujica and Torres, 1982; North and White, 1982; Slosarczyk and Rembiszewski, 1982; Burchett et al., 1983; Efremenko, 1983; Keller, 1983; Rasoanarivo and Aboussouan, 1983; Kellermann and Kock, 1984; Hubold, 1985; Kellermann and Slosarczyk, 1985 and Sinque et al., 1986). Emphasis was also given to hydrographic analysis in the southern ocean of the Atlantic sector in areas of biological interest (Stein, 1979; Anon., 1982b; Ikeda et al., 1982; Anon., 1983; Stein and Suszczewiski, 1983), to better understand the relationships between the environment and the biology of Antarctic animals.

This paper reports about the species composition, distribution and abundance of larval and postlarval Antarctic fishes found around Elephant Island and Bransfield Strait.

All species caught in these areas were registered in Antarctic waters and the present results extend the limit of distribution to Elephant and adjacent islands.

MATERIAL AND METHODS

The plankton sampling stations around Elephant Island and Bransfield Strait realized during the southern summer 1983/84

(PROANTAR II) and 1984/85 (PROANTAR III) are illustrated in Figs. 1-2.

The collections were made on board of the Oceanographic R/V "BARÃO DE TEFFÉ" using a modified cylindric-conical net (500μm mesh) for horizontal (H) and oblique (O) hauls and a closing net (C-325μm mesh) for stratified sampling, both equipped with a calibrated flowmeter.

Hydrographic data were obtained at each station with Nansen bottles equipped with reversing thermometer at 50 meters intervals from the surface to the plankton sampled depths. Plankton was fixed and preserved in 4% buffered sea water formaldehyde. In the laboratory all the fish larvae and postlarvae were sorted, identified and counted. The species were identified according to Regan (1916), North and White (1982) and Efremenko (1983). The relative abundance is given in density (number of ind./1,000 m^3). The standard length (SL) was measured to the milimeter below by means of an ocular micrometer mountend in Wild-M8 stereozoom dissecting microscope.

RESULTS AND DISCUSSION

The larvae and postlarvae Antarctic fishes were caught in 12 (37,5%) of the 32 plankton sampled stations. All the material was collected in an epipelagic zone where the depths from the bottom ranged from 110 to 1240 meters (shallow waters over the shelf and continental slope).

The positively sampled stations data and percentage of larvae and postlarvae in the total catch are listed in TABLE I.

The density of the ichthyoplankton (Figs. 3-4) was higher at station 18 followed by station H, both off Elephant Island.

Species composition, size, number and occurrence of larvae and postlarvae summarized in TABLE II show a greater diversity of species around Elephant Island than in Bransfield Strait. There are: **Pleuragramma antarcticum** Boulenger, 1902; **Notothenia kempi** Normann, 1937; **Notothenia larseni** Lönnberg, 1905 (Nototheniidae); **Notolepis coatsi** Dollo, 1908 (Paralepididae); **Electrona antarctica** Günther, 1878 (Myctophidae); and **Champsocephalus gunnari** Lönnberg, 1905 (Channichthyidae). In

TABLE I. Positively sampled stations data of larvae and postlarvae Antarctic fishes around the Elephant Island and Bransfield Strait during the southern summer 1983/84 and 1984/85.

REGION	YEAR	stn	POSITION		DATE	LOCAL TIME	LOCAL DEPTH (m)	HAUL TYPE	DEPTH OF TOW (m)	PERCENTAGE OF LARVAE
			Lat. (S°)	Long. (°W)						
ELEPHANT ISLAND	1983/84	2	61°20'00"	55°15'00"	22/02	15:40	150	O	130-0	01
		11	61°01'00"	54°28'05"	01/03	13:20	612	O	150-0	01
		18	61°03'05"	55°50'00"	02/03	13:05	146	C	50-0	98
	1984/85	A	61°18'22"	55°55'12"	27/02	10:48	320	O	90-0	26
		B	61°24'19"	55°32'09"	26/02	11:10	435	C	200-100	02
		C	61°21'06"	55'06°03"	27/02	23:05	430	H	25-30	02
		D	61°09'00"	54°22'00"	28/02	22:30	210	H	25-30	07
		F	61°01'00"	54°57'00"	28/02	15:35	510	O	90-0	02
		H	61°17'05"	54°52'57"	01/03	20:04	110	H	25-30	47
BRANSFIELD STRAIT	1984/85	III	62°47'00"	59°48'00"	11/03	02:45	1040	H	25-30	02
		V	62°25'01"	58°29'00"	14/03	09:45	1240	H	15-20	05
		VI	62°06'30"	58°24'01"	16/03	17:45	320	H	35-40	07

TABLE II. Species, size, number and occurrence of larvae and postlarvae of Antarctic fishes.

Southern summer 1983/84.

TAXON	COMMON NAME	NUMBER	SIZE RANGE (mm)	OCCURRENCE STN ELEPHANT I
NOTOTHENIIDAE				
Pleuragramma antarcticum	Antarctic herring	75	13.2-17.3	2, 18
Notothenia kempi	Antarctic cod	2	10.1-10.3	18
Notothenia larseni	Antarctic cod	3	09.3-10.7	18
PARALEPIDIDAE:				
Notolepis coatsi	Ionah fish	1	34.1	11

Southern summer 1984/85

TAXON	COMMON NAME	NUMBER	SIZE RANGE (mm)	OCCURRENCE STATIONS	
				ELEPHANT I	BRANSFIELD S.
NOTOTHENIIDAE					
Pleuragramma antarcticum	Antarctic herring	25	11.3.-23.0	A, H	
Notothenia gibberifrons	Antarctic cod	3	20.0-37.0		III, VI
Notothenia kempi	Antarctic cod	3	09.0-16.2	A	VI
PARALEPIDIDAE:					
Notolepis coatsi	Ionah fish	1	23.5	B	
MYCTOPHIDAE:					
Electrona antarctica	Lantern Fish	20	04.4- 7.9	C, D, H	
CHANNICHTHYIDAE:					
Champsocephalus gunnari	Ice Fish	5	10.0-18.5	A, F	V

the Bransfield Strait only 3 species were found: **Notothenia gibberifrons** Lönnberg, 1905; **Notothenia kempi** Normann, 1937 (Nototheniidae) and **Champsocephalus gunnari** Lönnberg, 1905 (Channichthyidae).

The reduced number of stations and limited areas of sampling probably contributed to the scarce number of species. Sinque et al. (1986), studying the samples caught in more extensive areas of Bransfield Strait during the southern summer 1982/83, obtained a more diversified number of species. The occurrence of many larval and postlarval fishes off the Antarctic Peninsula and surrounding areas related with the hydrographic conditions and water masses, originated by the complex interaction of adjacent waters of the Bellingshausen Sea, the Weddell Sea, the Southern Drake Passage and the Scotia Sea, were reported by Yefremenko (1980), Wörner and James (1981), Slosarczyk and Rambiszewski (1982), Efremenko (1983), Keller (1983), Kellermann and Slosarczyk (1985) and Sinque (1986).

The total abundance of larvae and postlarvae (Fig. 5) show that **Pleuragramma antarcticum** is dominant (280,51 ind./1,000 m^3) followed by **Electrona antarctica** (129.23 ind./1,000 m^3). Keller (1983) and Hubold (1985) also found high numbers of **P. antarcticum** (85-98% among the fishes caught in the Weddell Sea).

The species density of larvae and postlarvae at different stations (Fig. 6) show a high concentration of. **P. antarcticum** at/ station 18 off the western coast and for **E. antarctica** at station H in southern coast, both in Elephant Island. The size frequency distribution, in percentage, of these species is indicated in Fig. 7. The dominant size classes of **P. antarcticum** were 15 mm SL and 19 mm SL, respectively, in 1983/84 and 1984/85. For **E. antarctica** the 5mm SL was the dominant class in 1984/85.

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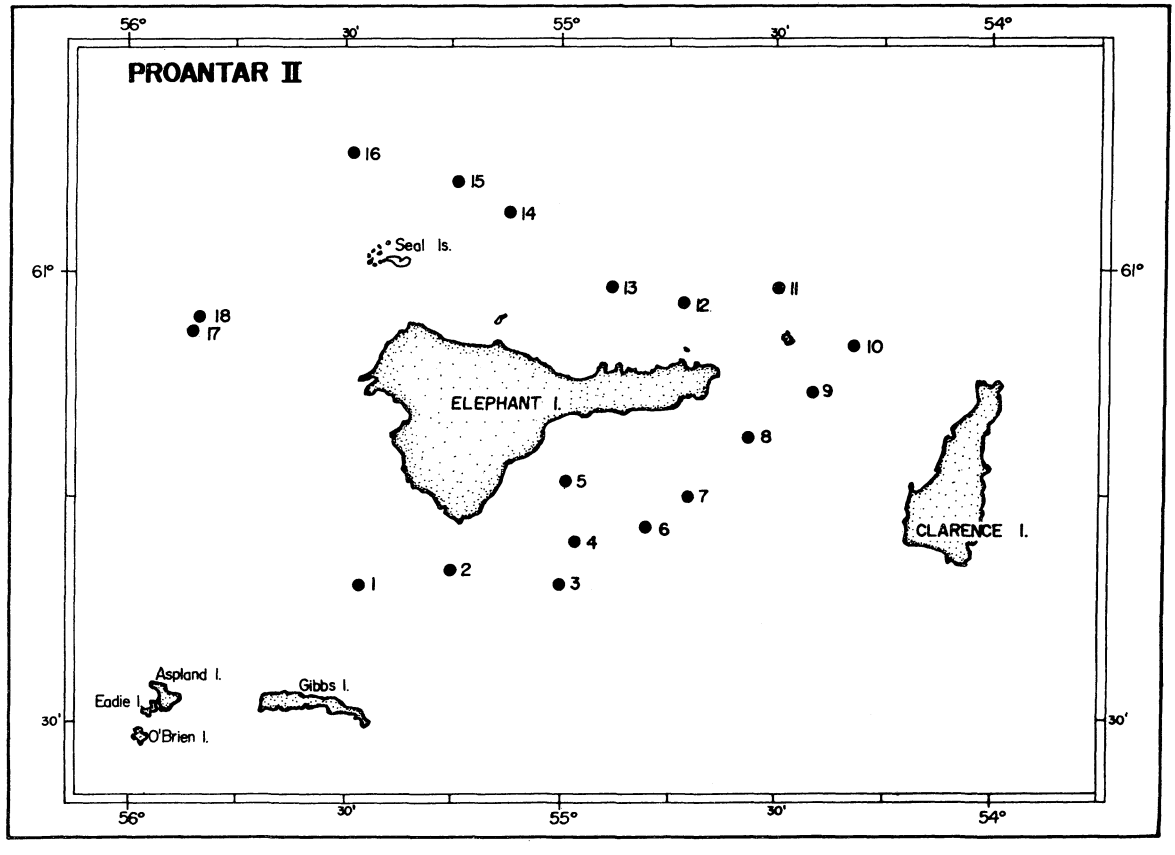

Fig. 1. Plankton sampling stations around the Elephant Island during the southern summer 1983/84.

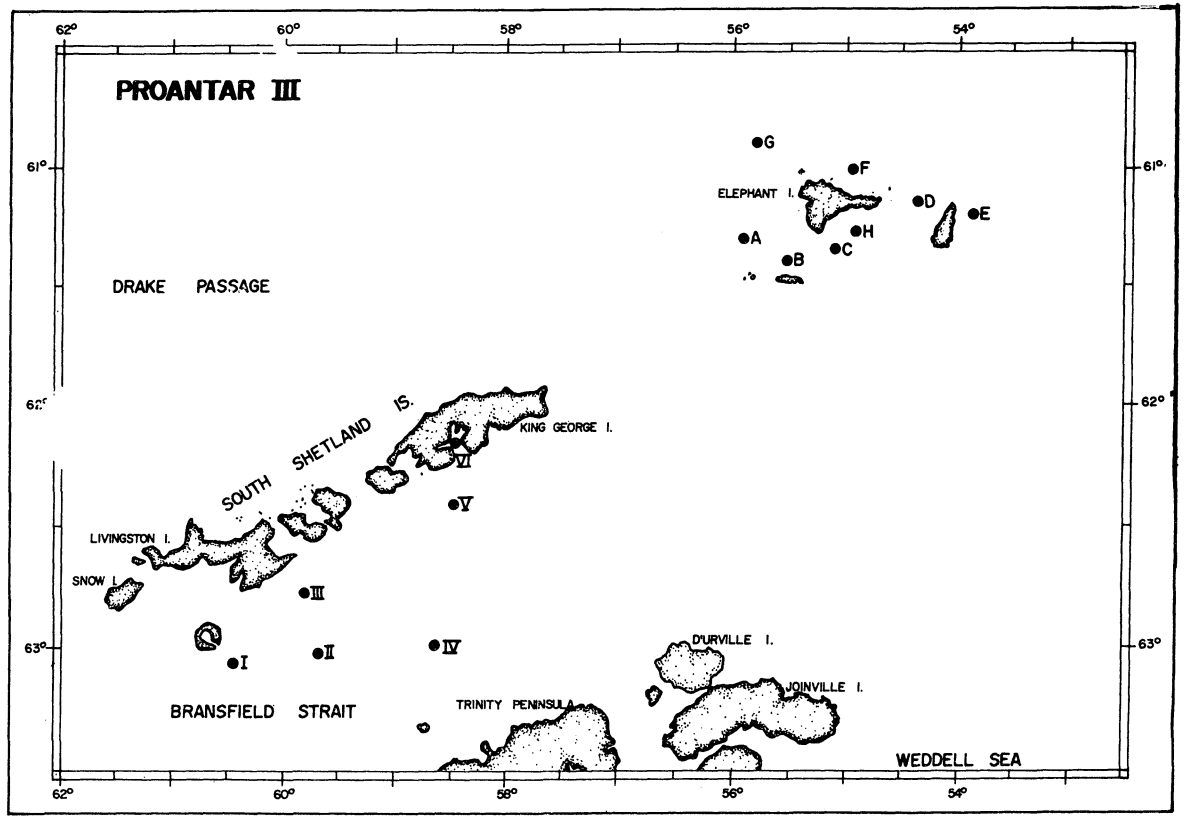

Fig. 2. Plankton sampling stations around the Elephant Island and Bransfield Strait during the southern summer 1984/85.

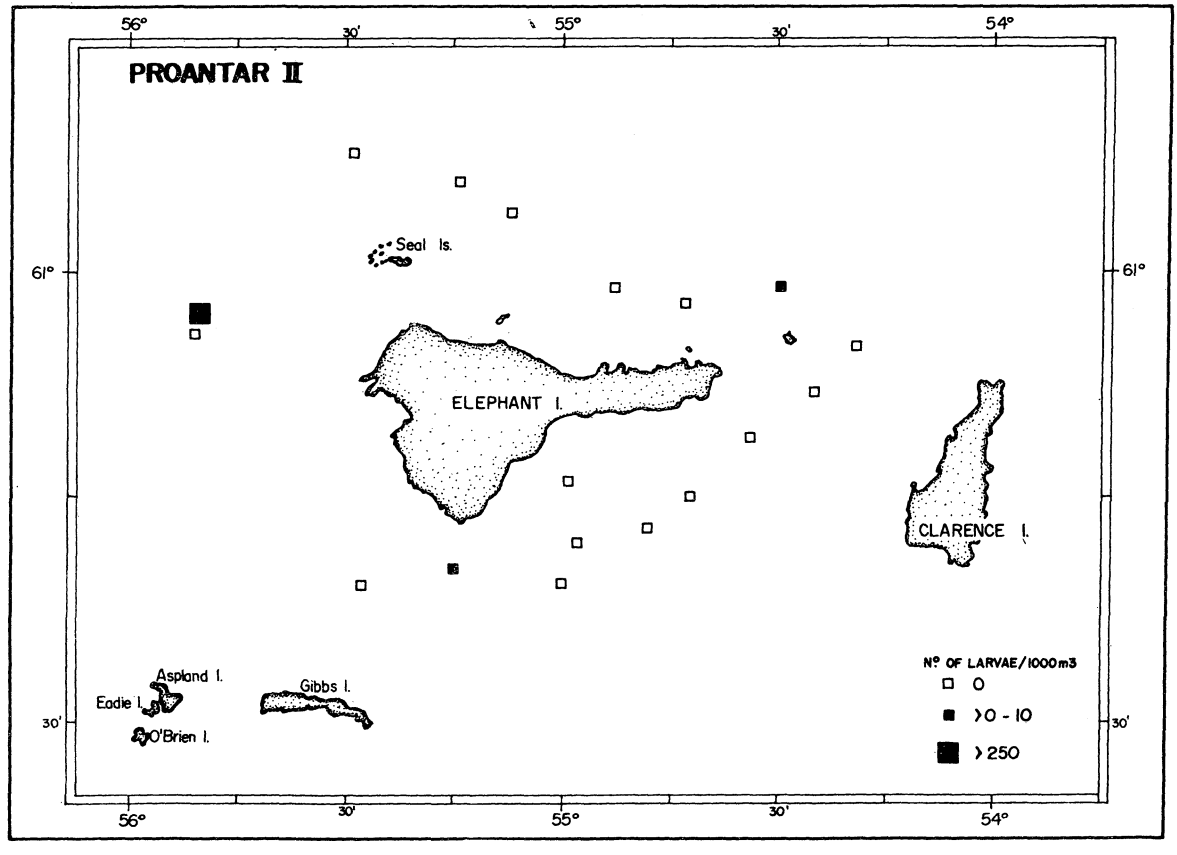

Fig. 3. Distribution, in density, of larvae and postlarvae Antarctic fishes around the Elephant Island during the southern summer 1983/84.

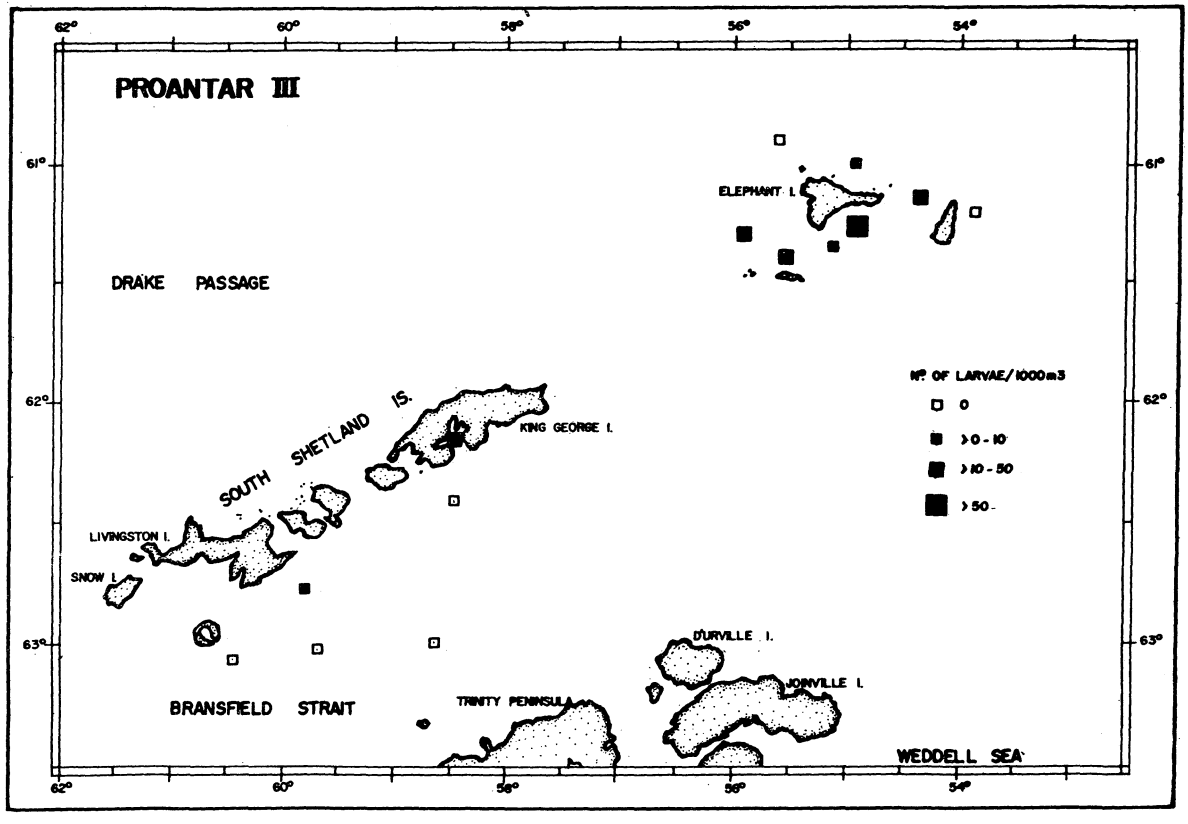

Fig. 4. Distribution, in density, of larvae and postlarvae Antarctic fishes around the Elephant Island and Bransfield Strait during the southern summer 1984/85.

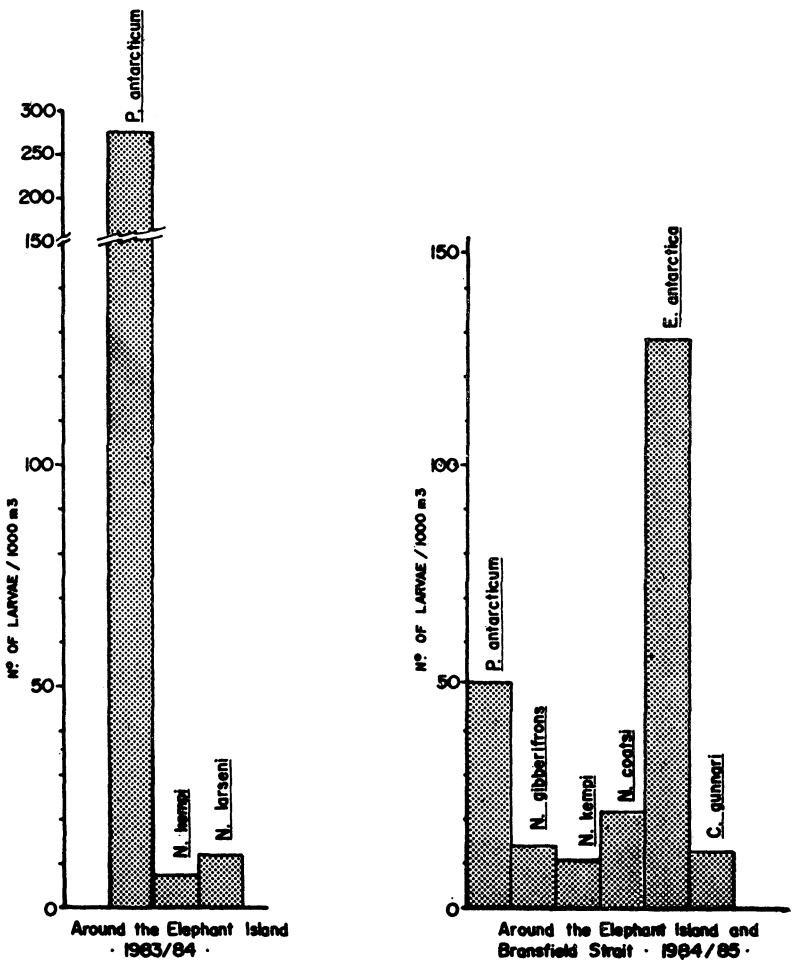

Fig. 5. Total abundance of larvae and postlarvae Antarctic fishes caught around the Elephant Island and Bransfield Strait during the southern summer 1983/84 and 1984/85.

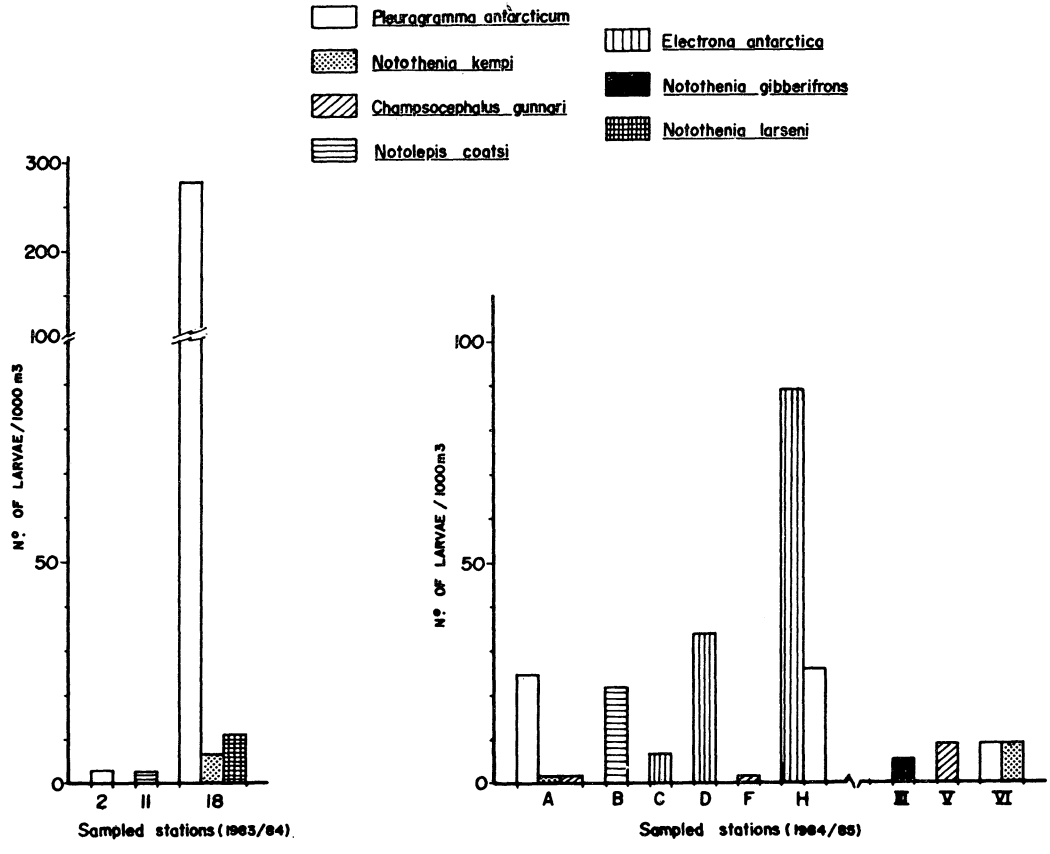

Fig. 6. Species density of larvae and postlarvae Antarctic fishes, at different sations during the southern summer 1983/84 and 1984/85.

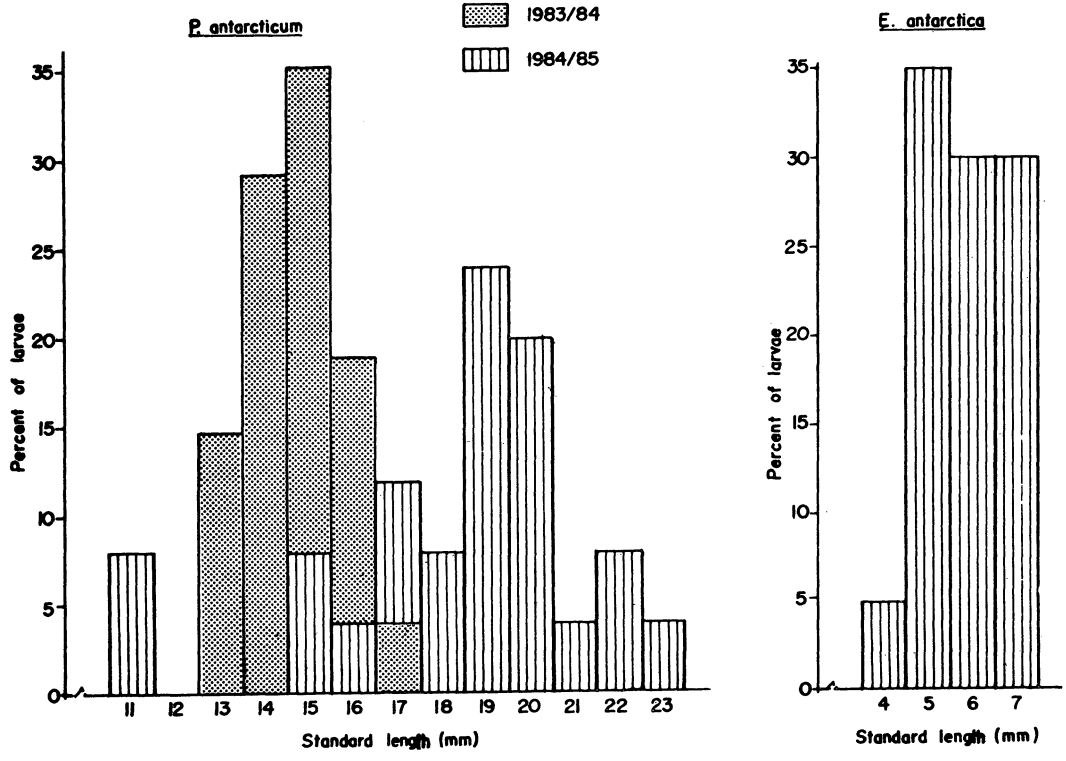

Fig. 7. Size frequency distribution of **P. antarcticum** and **E. antarctica** around the Elephant Island and Bransfield Strait during the southern summer 1983/84 and 1984/85.